

Twin Falls-Jerome Bridge
Spanning Snake River on U.S. Highway 93
Twin Falls
Twin Falls County
Idaho

HAER ID-3

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42-TWIFA

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
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HISTORIC AMERICAN ENGINEERING RECORD
TWIN FALLS-JEROME BRIDGE
(Perrine Bridge)
HAER ID-3

DATE: 1926-1927

LOCATION: Spanning Snake River on U.S. Highway 93

DESIGNED BY: R. M. Murray, demolished c.1946

OWNER: State of Idaho

SIGNIFICANCE: The bridge was built by The Union Bridge Company of Portland, Oregon. It is a cantilever deck truss that rises 550 feet above the height of the River. At the time of construction it was reportedly the "highest" bridge in the world.

HISTORIAN: Idaho Department of Transportation, 1977

TRANSMITTED BY: Gary Arabak, 1983

PERRINE BRIDGE

An unusual obstacle to travel disrupts communication across an otherwise open portion of the Snake river plains of southern Idaho. Immediately below Milner, the river descends into a narrow gorge that reaches a maximum depth of about 600 feet below Shoshone falls. Here the stream becomes unnavigable. Worse yet, roads and trails can cross the river at very few convenient spots. Travellers in the valley can come almost to the edge of the gorge without noticing that a large river is anywhere in the area. But aside from a spot above Murtaugh, no fairly easy grade could be constructed down both sides of the canyon to a bridge site for forty miles or more below Milner. Until the end of the nineteenth century this blockade did not create too much of a problem. Miners trying to recover Snake river fine gold in the gorge above Twin Falls worked in the area after 1869. But with no other settlements aside from a few scattered ranches and stage stations traffic in that part of the country was limited mostly to emigrants on the Oregon Trail and freight and stage lines on the Overland road. These transportation routes did not require frequent river crossings. C. S. Walgamott got a ferry franchise April 15, 1884 for a site directly above Shoshone falls. There he erected a resort hotel at a spectacular falls higher than Niagara. (Rail access as far as Shoshone made his project practical.) This ferry served only local traffic. Another canyon development also began in 1884. I. B. Perrine settled at Blue lakes, about four miles down from the gorge from Shoshone falls. After sixteen years, he arranged for large scale reclamation of the plains above his ranch. A new era came in the development of the Twin Falls country.

At the beginning of the twentieth century, Perrine's irrigation projects changed the transportation situation entirely. Important communities grew up on both sides of the river, and bridges became necessary to meet the needs of a

large agricultural empire. Perrine installed a ferry at his Blue lakes ranch about 1902. A narrow steep road descended both sides of the canyon to his ferry. Stage coaches, wagons, and daring automobile drivers could get across the river between the new cities of Twin Falls (1904) and Jerome (1908)--fourteen miles apart by way of Perrine's ferry, but close to forty miles by the nearest road and ferry below the gorge. A bridge at Milner dam provided a crossing an equal distance upstream. In between, a high bridge to connect both rims of the canyon was proposed for Shoshone falls in 1909. Intended to have a span of 1140 feet, and a height of 550 feet above the river, such a structure "would command a perfect view of the magnificent Shoshone falls . . ." In addition, a high bridge would dispense with any need to go down a steep grade to the ferry and back up again. The legislature was asked for \$100,000 to help pay for this ambitious project. In response, an act was approved, March 11, 1909, to allow counties to contract with private companies for construction of expensive bridges which could be funded by toll collection for as long as might be necessary. This concession to Twin Falls failed to produce any bridge. So in 1910, I. B. Perrine started construction of a low bridge at his ferry site. When his bridge went into service, January 30, 1911, part of the regional transportation problem was solved. But the perilous road up and down the canyon walls made access to his bridge hazardous in winter and slow any time of year. Several more bridges, including one or two high ones, clearly were needed.

A new petition to the Twin Falls county commissioners early in 1914 revived interest in the high bridge proposed for Shoshone falls. After extended consideration of the entire transportation problem, the county decided that three bridges should be assisted: Shoshone falls with \$10,000 in county funds; a high structure north of Hansen, with \$8,000; and a river level bridge at Murtaugh, where a road could be built into the canyon with \$3000. That appropriation allowed an \$8700

contract to be let for the Murtaugh bridge in December. (Road districts could manage the rest of the cost.) Interest in the Hansen possibility was increased with a petition, September 19, 1914, for construction there. Plans were made for a 688 foot suspension bridge at an eligible site in a narrow section of the gorge. Within two years the bridge was funded, but problems of trying to build during war time brought an additional two year delay. Costs rose considerably during the construction period, but after the war the project was completed anyway. A modest suspension bridge provided a good crossing 345 feet above the river from July 4, 1919 to September 18, 1966, when a replacement went into service.

During April, 1919, R. M. Murray, construction engineer for Hansen bridge, went out to search for a good site for another high bridge that would connect Jerome and Twin Falls. He found a very promising location west of Shoshone falls just above Perrine's bridge north of the city of Twin Falls. Close to a direct line between Twin Falls and Jerome, the Perrine route shortened the distance between those cities by six to eight miles over the Shoshone falls detour. After extended consideration of the entire matter, the Twin Falls county commissioners decided not to go ahead with their previous plan to build at Shoshone falls. So Murray developed plans to form a toll bridge company. In February 1920, after detailed analysis of three sites, in which he compared suspension, arch, and cantilever possibilities, he chose the latter design for the Perrine site. But several years of inactivity followed. Finally the directors of the Twin Falls Chamber of Commerce (which had stirred up interest in the bridge project originally) decided, July 2, 1924, to promote the matter again. State support was solicited, and progress was made by the end of the year in interesting appropriate authorities in the matter. But the state had a low bonding limit that did not permit any additional issue to help finance the bridge. So the Chamber of Commerce decided upon a joint venture with the Jerome Chamber to organize a corporation which could finance

the bridge. In the spring of 1925, D. B. Steinman--president of the American Association of Engineers, got interested in building such a bridge, and induced Frank R. Dravo of Pittsburgh to apply for a franchise. Both the Dravo and the Murray proposals came before the county commissioners, November 20, 1925. Finally Murray obtained the project, December 31, 1925, on condition that construction be completed in a little less than two years. After some more delay, the Union Bridge Company of Portland--for whom Murray was chief engineer--agreed on May 3, 1926, to expedite the project. Modifications in the franchise arrangement were agreed to on July 14, and the franchise was transferred to the Union Bridge Company and the Puget Sound Bridge and Dredging Company, which undertook construction.

In promoting his project, Murray emphasized the superlative dimensions of his plans. After an extended search, he concluded that no other bridge of this height had been built anywhere. (At that time, the highest bridges in the world had been built in the Tyrol [453 feet], in France [435 feet], and in Africa, where the notable Victoria falls bridge [420 feet] spanned the Zambesi between Northern and Southern Rhodesia. None of these structures had as long a span as Murray's projected venture.) His project called for 2900 tons of steel, with 98,750 individual pieces. At the site, these parts were rivited into members that were placed in the bridge. A 1525 foot construction cable across the canyon (pulled into place by a donkey engine on the north side) had to handle the weight of the heaviest members. Some design adjustments had been made, but generally the final specifications matched Murray's 1920 proposal quite closely:

In the final design prepared for construction the main opening varies only two feet from that originally proposed. Tower spans were lengthened and anchorage locations in canyon walls changed some. The roadway was widened three feet, concentrated live load capacity was increased

and the members made heavier to conform to requirements of the standard specifications used by the United States bureau of public roads in the design of steel bridges. Total live load capacity for which the structure has been designed and detailed is 910 tons. If loaded wholly with vehicles, the structure would safely carry better than thirty-six 25-ton trucks or their equivalent, or ninety-one ten-ton trucks, or three hundred and sixty four ordinary loaded automobiles.

Construction of the bridge commenced November 1, 1926 and required less than a year. By September 1, work was far enough along that a car could be driven across the new structure, and the bridge was opened to traffic on September 15 in order to accomodate visitors to the Jerome county fair. A great dedication ceremony was held October 1, after work was completed. Tolls were 60¢ for a car and driver, and 5¢ for pedestrians or for additional passengers. Sheep got by for 2¢ each, while trucks had to pay a dollar. A 25 ton load limit was imposed to protect the bridge. Traffic between Twin Falls and Jerome at last could proceed without having to use the Shoshone falls ferry (that had begun service in 1884) or negotiate the steep grade to Perrine's adjacent bridge.

During the depression, the Twin Falls Chamber of Commerce worked to get the state to purchase the bridge and remove the tolls. (The original franchise, which ran for 50 years, provided for that possibility.) Governor C. Ben Ross was approached June 29, 1934--a year after the state had been asked to assume responsibility-- but a long campaign was necessary to realize this objective. Finally, in a toll bridge acquisition act of March 11, 1939, up to \$500,000 was made available for state investment in the bridge. The bridge, which had cost about \$600,000 twelve years before, was estimated to have a \$628,813.81 replacement cost. Allowing \$157,056.64 for depreciation, the bridge was valued at \$471,757.17

and purchased for \$482,000 on April 30, 1940. In the toll period, about \$1,332,000 was collected for use of the bridge, but operating costs (\$592,745.26 out of \$634,786.93 for the years 1927-1933 alone) ran high.

As part of the state highway system, the Twin Falls-Jerome bridge was renamed the Perrine Memorial bridge and continued to serve regular highway needs until November 18, 1969 when a 44,000 pound limit was imposed. Overloading—with trucks carrying as much as 79,000 pounds—had weakened the structure, requiring a new bridge in 1976. In the meantime, heavy vehicles had to go back to using Hansen bridge. Although the original Twin Falls-Jerome rim-to-rim bridge had not been designed for heavy use that developed during its half century of service, the structure is one of Idaho's outstanding engineering achievements.

Construction Chronology: Twin Falls Daily News October 1, 1927

The story of the building of the Twin Falls-Jerome bridge from the standpoint of the resident engineer is graphically outlined in a diary recording daily progress in the work that ~~has been~~ kept by L. S. Tubbs, resident engineer, from the time he came on the job on November 18, 1926.

On that day, according to the diary record, one man began working on an office building for the resident engineer. That man's work continued two days and then he was given an assistant. On the fourth day six men were working on office buildings and three other men were working on the plant to start excavation on the north anchor.

On November 23, the fifth day, four men started building the stairway on the south side canyon wall leading down from the rimrock to the base of the precipice, and five men were at work on plant on the north side.

The record continues:

November 24--Started excavation on north anchor, five men; six men on south stairway and office buildings.

December 6--Started south anchor excavation today; also working on south road, force account, and north anchor.

December 8--Seventeen men working on north and south anchors; one man on plant and seven men on road.

December 21--Thirteen men on plant; four on cableway towers and one on the road.

January 10--Working on cableway towers--both sides--27 men; anchor excavation south side and plant.

January 12--Started north tower footing holes.

January 15--Finished north anchor and slope on wall.

January 24--Started south tower footing excavation; thirty-four men working.

The record for the month of February contains only minor variations from the entry on the first day which read, "Work on cableway towers, plant and excavation on north and south tower footing holes; thirty eight men working."

On March 1, the diary records, starting of cableway erection, working 23 men on it; nine men on tower footing excavation; one man on plant repairs and eight on cableway towers. The diary continues the record of progress, showing:

March 17--Finished south anchor and finished cleaning out footing holes on the north side today; 42 men working.

March 28--Unloaded the first carload of steel today; working on forms, plant, and lower footing excavations on south side, also pouring concrete on north piers.

Ole Hovind, steel erection foreman, the diary records on April 4, "got on the payroll today." The same day witnessed completion of concrete work on north tower piers and beginning of pouring concrete at the north anchor.

On April 4, iron workers started to work, working in the yard.

April 11--Snow storm; five men working on plant repairs.

April 13--Eight iron workers working, started to put up steel on north tower piers today; total men working, 45.

April 23--Finished excavation for south tower piers today.

Forty-five men were employed on the first day of May working on plant, building forms for south tower piers, erecting steel on the north tower and pouring concrete on south tower piers.

May 12--Finished steel erection on north tower.

May 13--Started riveting on north tower.

May 14--Finished concrete on south piers today.

May 16--Started steel erection on south tower, 60 men working.

May 28--Four men working on plant; snow storm and blizzard, no one could work outside.

May 30--Eighteen men working on plant; rest of crew laid off Decoration day.

Erection of steel on the south tower was completed on June 6. Riveting on the north tower was finished and riveting on the south tower began.

June 22--Finished steel erection on truss over north tower; finished riveting on south tower. Work was in progress on the plant, temporary construction; false work. painting of steel and work on hand rail lumber in yard.

On July 1 seven men were at work on plant, four men on deck and rails, five men painting steel, 15 men erecting steel, 12 men riveting; 27 iron workers and 18 bridgemen working.

July 11--Two shifts starts today.

July 13--Seventy-four men working.

July 30--Eighty-one men working.

This was the disposition of the workers on August 1, as shown by the diary: Five men on deck and rails, two on plant, 26 erecting steel; 18 riveting; 11 painting steel; 67 men working.

August 26--Swung the suspended span and completed the steel erection today.

August 14--Fourteen men taking down travelers; 38 riveting and five men painting steel; also working on toll house, deck and rails and roads and approaches; 72 men working. [This appears to be September 14.]